What is claimed:

1. Apparatus for dispensing a chilled viscous confection comprising a blend of frozen edible base product and edible ingredient solids, the apparatus comprising:

a receiver for stationary attachment to a freezer producing a frozen edible base product and for the frozen base product from a dispensing outlet of the freezer;

said receiver having a blending chamber;

a conveyor auger having a portion in said blending chamber;

an auger drive motor coupled to said auger for driving said auger in rotation;

a plurality of containers for ingredient solids;

a plurality of valves, each of said valves being associated with a different one of said containers for controlling delivery of solids from said containers;

a dispensing hopper associated with said valves to receive solids delivered from said containers;

a passageway from said dispensing hopper to said blending chamber for delivery of solids from said dispensing hopper to said blending chamber;

a plurality of valve drive motors, each of said valve drive motors being coupled to a different one of said valves;

a controller coupled to said valve drive motors and having a selector for selecting and enabling selected ones of said valve drive motors to operate in sequence;

a switch coupled to said controller and operable to activate said controller to operate selected ones of said valve drive motors to operate valves coupled to selected ones of said valve drive motors, to deliver solids from containers associated with said valves which are coupled to

selected ones of said ones of said drive motors, to said dispensing hopper for delivery to said blending chamber for said auger to move said delivered solids into said base product during the dispensing of said base product from said freezer.

2. The apparatus of claim 1 and further comprising:

a tube having an inlet end for coupling to the dispensing outlet of the freezer, said tube providing a rotational axis for said auger to be driven in rotation on said axis; and said tube having an outlet end at said blending chamber.

3. The apparatus of claim 2 and wherein:

said receiver includes a blender hopper which has upper and lower ends and a wall which has an inside surface which is circular about said axis, said inside surface having a profile defined by a cylindrical portion and a converging portion extending downward from said cylindrical portion and inward toward said axis;

said blending chamber is in space encompassed by said converging portion;

said auger has first and second helical flights, each flight having an upper end and a lower end, and

said flights have a profile matching said profile of said inside wall surface of the blender hopper to fit said inside wall surface and sweep the said delivered solids down said inside wall surface toward said blended product outlet as said auger is rotated on said axis.

4. The apparatus of claim 3 and wherein:

said auger has a hollow core, with said tube extending axially in said core;

portions of said core are cut out beginning at diametrically opposite locations near said outlet end of said tube to provide cutouts on said core; and

said cutouts are closer to said blended product outlet than is said outlet end of said tube for enabling said solids when swept down said inside wall by rotation of said auger to move inward toward said axis of rotation and through said cutouts and blend into said base product passing from said outlet end of said tube toward said blended product outlet.

5. The apparatus of claim 2 and wherein:

said receiver includes a blender hopper which has upper and lower ends and a wall which is circular about said axis, the wall having an inside surface portion profile defined in part by:

a first cylindrical upper wall portion extending in a direction axially downward relative to said upper end to a first circle, a first conical wall portion extending downward and inward from the first circle to a second circle, a second cylindrical wall portion extending downward from the second circle to a third circle, and a second conical wall portion extending from the third circle downward and inward toward a fourth circle at said lower end;

said blending chamber is in space encompassed by said second conical wall portion;

said auger has a first helical flight having an upper end and a lower end, the lower end of said flight being in said blending chamber;

said flight has an outer perimetrical edge with a profile matching said wall surface profile to fit the said wall inside surface of the blender hopper and sweep said solids down the said wall inside surface as said auger is rotated on said axis.

6. The apparatus of claim 5 and wherein:

said tube surface which provides a rotational axis is an exterior cylindrical bearing surface;

said auger has a hollow core with an interior cylindrical surface portion rotatably received on said bearing surface of said tube, whereby said tube provides said rotational axis for said auger.

7. The apparatus of claim 6 and wherein:

said auger has a second helical flight which has an upper end at a location diametrically opposite, relative to said axis, the upper end of said first flight; and

said second flight has a lower end at a location diametrically opposite relative to said axis, the lower end of said first flight and the lower end of said second flight is in said blending chamber.

8. The apparatus of claim 7 and wherein:

portions of said auger core have cut-outs at diametrically opposite locations near said lower ends of said auger flights; and

the interior surface portion of the core is flared outward diametrically from said cylindrical surface portion to the bottom faces of the flights at the top of the cut-outs.

9. The apparatus of claim 8 and wherein:

said outlet end of said tube is adjacent the said bottom faces of the flights at the tops of the cut-outs.

10. The apparatus of claim 9 and wherein:

the lead of each flight is the same as the lead of the other flight and is a distance, measured in the direction of said axis, between points 360 degrees apart on the outer peripheral edge of a flight ; and

the distance between the second circle and the third circle on said blender hopper and measured in the direction of said axis is substantially equal to half the lead of the flights.

11. The apparatus of claim 9 and wherein:

the bottom of said blending chamber is at said fourth circle;

the lower ends of said flights are at the bottom of said blending chamber; and

the inside diameter of said auger at said lower ends of said flights is substantially the same as the inside diameter of said interior cylindrical surface of said auger core.

12. The apparatus of claim 9 and wherein:

the upper ends of said flights have leading edges which are beveled downward and rearward from said leading edges.

13. The apparatus of claim 12 and wherein:

said leading edges extend radially outward at diametrically opposite locations relative to said axis.

14. The apparatus of claim 1 and further comprising:

(1) a mounting base arranged for stationary attachment to said freezer;

(2) a plurality of storage modules mounted to said mounting base, each module having:

(a) a motor housing containing one of said valve drive motors and having a valve cavity containing one of said valves, the valve cavity having a bottom; and

(b) a container base secured to said motor housing and covering said cavity, and said container base having an upwardly opening socket receiving an open end of one of said containers; and

(c) a fastener securing said module to said mounting base, said fastener being operable to a loose condition to enable removal of said module from said container base.

15. The apparatus of claim 14 and wherein:

each of said storage modules has a plan view shape like a sector of a circle, and said modules are mounted to said mounting base in side-by-side arrangement whereby said plurality of modules form a circle of said modules, and each of said modules is removable from the circle independently of the other modules.

16. The apparatus of claim 14 and wherein:

each of said valves is a transfer impeller coupled to said drive motor for rotation by said drive motor to transfer solids dropped from a container mounted in a container base socket having a bottom, through a first hole in the bottom of the socket, from the valve cavity to a second hole in the bottom of the valve cavity for dropping the solids into the dispensing hopper.

17. The apparatus of claim 16 and further comprising:

an agitator in each of said container base sockets and coupled to said drive motor, said agitator projecting into the open end of the container received in said socket to stir solids in said container while said transfer impeller transfers said solids in said cavity from said first hole to said second hole.

18. The apparatus of claim 17 and wherein:

said transfer impeller has at least two arms extending outward radially relative to a rotational axis of the impeller, said arms being about one-half as high as said valve cavity from the bottom of said cavity to the bottom of said container base socket, and said arms having faces which are leading during rotation of said impeller beveled at the top of the arms; and

said agitator has arms generally parallel to said impeller arms and having leading faces indexed rotationally ahead of said leading faces of said impeller arms.

19. The apparatus of claim 14 and wherein:

said solids containers received in said container base sockets are retained by friction fit into said sockets, but each of said modules is removable by hand from the container received in the module socket and without tools, to refill a container with solids when the open end of the container is facing upward.

20. The apparatus of claim 7 and wherein:

said auger has a gear above the upper ends of said flights; and

said gear is centered on said axis; and

said auger drive motor is coupled by gearing to said gear.

21. The apparatus of claim 1 and wherein:

said selector includes a panel having:

a plurality of selector keys, each of said keys having indicia distinguishing said key from all others of said keys to enable selection of said valve drive motors; and

a cycle time adjusting key.

22. The apparatus of claim 21 and further comprising:

lights associated with said keys to indicate state of actuation of said keys.

23. The apparatus of claim 21 and further comprising:

solids of one type of ingredient contained in at least one of said containers;

solids of another type of ingredient contained in another of said containers;

solids of a third type of ingredient contained in a third one of said containers; and

solids of different types of ingredients in others of said containers.

24. Apparatus for blending edible ingredient solids into a flowing, frozen edible base product and comprising:

a body adapted for coupling to a dispenser outlet of a freezer for said base product, said body having a blended product outlet, and said body having a spindle tube for passage of said base product from a dispenser outlet of a freezer through said spindle tube toward said blended product outlet, said spindle tube having an upper end and having a lower end;

a storage assembly for storage of ingredient solids for blending with said base product passed through said spindle tube;

a transfer hopper coupled to said storage assembly and to said body for guiding said solids;

said body including a blender hopper coupled to said transfer hopper for receiving ingredient solids from said transfer hopper and for introducing the ingredient solids to said base product;

a blending chamber in said blender hopper between said spindle tube and said blended product outlet;

a blending auger in said blender hopper and encircling at least a portion of said spindle tube and mounted on said spindle tube for rotation on an axis of rotation for moving said solids toward said blended product outlet, said auger having an upper end and having a lower end;

a blender motor coupled to said auger for rotation of said auger on said axis;

valves in said storage assembly and operable, when actuated, for release of stored ingredient solids from said storage assembly to said transfer hopper; and

a controller coupled to said blender motor and to said valves to operate said auger to move released ingredient solids into said base product during passage of said base product from said tube to said blended product outlet.

25. The apparatus of claim 24 and wherein:

said storage assembly includes a plurality of containers for ingredient solids;

said apparatus further comprising:

a plurality of valve activators, each of said activators being associated with a different one of said containers than all of the other activators, and operable independently of all others of said activators, for release of ingredient solids from the one container with which said activator is associated, independent of the other containers of said plurality.

26. The apparatus of claim 25 and wherein:

said controller is coupled to said blender motor and to said valve activators and is operable to establish a time cycle of operation of said activators;

the apparatus further comprising:

a selector coupled to said controller and manually operable to enable a user to select which of said activators will be operated during a cycle of operation of said activators.

27. The apparatus of claim 26 and further comprising:

a switch coupled to said controller and operable, when actuated, to initiate and maintain a period of operation of said blender motor.

28. The apparatus of claim 26 and wherein:

said valves are transfer impellers;

said valve actuators are dispensing motors, each transfer impeller being coupled to a different one of said dispensing motors to be driven thereby for moving ingredient solids from the container associated with said dispensing motor into the transfer hopper.

29. The apparatus of claim 28 and further comprising:

a plurality of agitators, each agitator being coupled to and driven by one of said dispensing motors and extending into the container associated with the dispensing motor for facilitating movement of ingredient solids from the container to the transfer impeller.

30. The apparatus of claim 28 and further comprising:

a switch coupled to said controller selector for initiating operation of selected dispensing motors and the blender motor for rotating said auger and blending ingredient solids released from selected ones of said containers into said base product flowing from said spindle tube to said blended product outlet.

31. The apparatus of claim 26 and wherein:

said controller is operable to predetermine a selected duration of a cycle of operation at a value in a range between 0.2 seconds and 2.0 seconds following initiation of operation of said blender motor.

32. The apparatus of claim 31 and further comprising:

a switch coupled to said selector and operable, when actuated, to initiate operation of said blender motor;

said controller being operable to maintain operation of said blender motor as long as said switch is actuated, and said selector being operable to program said controller to repeat the selected cycle time of operation as long as said switch remains actuated.

33. The apparatus of claim 25 and further comprising:

a freezer producing said frozen base product and having said dispenser outlet and capable of initiating and terminating discharge of said base product from said freezer at said dispenser outlet;

said body being coupled to said dispenser outlet;

said storage assembly being coupled to said body; and

a switch coupled to said controller and operable, when actuated, to initiate operation of said blender motor and at least one of said valve activators.

34. The apparatus of claim 33 and wherein:

said switch is operable substantially concurrently with initiation of discharge of said base product from said freezer.

35. The apparatus of claim 33 and wherein:

said freezer has means for initiating and terminating discharge of said base product.

36. The apparatus of claim 35 and wherein:

said freezer has said dispenser outlet on a spigot;

said body being coupled to said spigot.

37. The apparatus of claim 36 and wherein:

said spigot has a handle which is movable for initiating and terminating discharge of said base product from the freezer; and

said switch is at said handle and is operated by movement of said handle to initiate and terminate said discharge.

38. The apparatus of claim 33 and further comprising:

solids of one type of ingredient contained in at least one of said containers;

solids of another type of ingredient contained in another of said containers;

solids of a third type of ingredient contained in a third one of said containers; and

solids of different types of ingredients in others of said containers.

39. The apparatus of claim 33 and wherein:

said auger has helical flights centered on said axis of rotation and which have lower ends..

40. The apparatus of claim 39 and wherein:

said blender hopper has an inside wall surface which is circular about said axis;

a portion of said inside wall surface has a profile defined by a cylindrical portion, and a converging portion extending downward from said cylindrical portion and inward toward said axis;

said blending chamber is in space encompassed by said converging portion;

said helical flights have a profile matching said profile of said inside wall surface portion of the blender hopper to fit said inside wall surface portion and sweep the said released solids down said inside wall surface portion toward said blended product outlet as said auger is rotated on said axis.

41. The apparatus of claim 40 and wherein:

said auger has a hollow core, with said spindle tube extending axially in said core;

portions of said core are cut out beginning at locations circularly spaced on said core near said lower end of said spindle tube to provide cutouts on said core; and

said cutouts are closer to said blended product outlet than is said lower end of said spindle tube for enabling said released solids, when swept down said inside wall surface portion by rotation of said auger, to move inward toward said axis of rotation and through said cutouts and blend into said base product passing from said lower end of said spindle tube toward said blended product outlet.

42. The apparatus of claim 39 and wherein:

said blender hopper has a top and bottom and said blended product outlet at the bottom;

said blender hopper has a first generally conical inside wall portion centered on said axis of rotation;

said first generally conical wall portion tapers downwardly and inwardly toward said axis, and to a first cylindrical inside wall portion;

said first cylindrical wall portion is centered on said axis and extends axially to a second generally conical inside wall portion; and

said second generally conical wall portion tapers downwardly and inwardly toward said axis and to said bottom of the blender hopper.

43. The apparatus of claim 42 and wherein:

said auger flights have peripheral shapes which fit the contour of said generally conical and cylindrical inside wall portions of said blender hopper, to sweep said solids received in said blender hopper downward toward said blended product outlet as said auger is rotated.

44. The apparatus of claim 43 and wherein:

said auger flights have upper ends and lower ends; and

said lower ends are adjacent the bottom of said blender hopper.

45. The apparatus of claim 44 and wherein:

upper ends of said flights are at diametrically opposite locations relative to said axis of rotation and have leading edges extending in directions radially outward relative to said axis and are beveled downward and rearward; and

said lower ends of said flights are in a plane perpendicular to said axis and at diametrically opposite locations relative to said axis and are in a plane containing said axis, and are adjacent to said blended product outlet.

46. The apparatus of claim 44 and wherein:

said lower end of said spindle tube is above the bottom of said blender hopper;

said auger has an elongate core having a longitudinal axis co-linear with said axis of rotation of said auger and having an inner cylindrical surface rotatably received on and radially bearing on a portion of said spindle tube;

said flights are centered on said core and project laterally from said core;

said core has cut-outs which begin at diametrically opposite locations on said core at the bottom faces of said flights adjacent said lower end of said tube; and

said cut-outs continue around said axis and adjacent said bottom faces of said flights downward to said lower ends of said flights.

47. The apparatus of claim 46 and wherein:

said cut-outs in said core are closer to said blended product outlet than is said lower end of said spindle tube for enabling ingredient solids moved toward said blended product outlet by rotation of said auger to move inward toward said axis of rotation and through said cut-outs and blend into said product passing from said lower end of said spindle tube toward said blended product outlet.

48. The apparatus of claim 46 and wherein:

said inner surface of said core is deformed from cylindrical at said cutout locations; and

portions of said inner surface adjacent said cutouts curve radially outward relative to said axis, curving into the said bottom faces of said flights at said locations where said cutouts begin and continuing downward adjacent said flights.

49. The apparatus of claim 48 and wherein:

portions of said inner surface of said core continue part-cylindrical axially downward to said lower ends of said flights.

50. The apparatus of claim 49 and wherein:

said flights continue downward axially from said locations where said cutouts begin, and inward from said locations toward said part-cylindrical inner surface portions and meet said part-cylindrical inner surface portion at said lower ends of said flights.

51. The apparatus of claim 48 and wherein:

said cylindrical inside wall portion of said blender hopper extends axially a distance substantially equal to the pitch dimension between the portions of said flights extending between said first generally conical wall portion and said second generally conical wall portion.

52. The apparatus of claim 48 and wherein:

said second generally conical inside wall portion defines a side wall of said blender chamber; and

the lower end of said spindle tube is adjacent said cut-outs;

whereby said generally conical inside wall portion urges said solids inward toward said axis and through said cut-outs into said base product during rotation of said auger and passage of said product from said lower end of said spindle tube toward said blended product outlet.

54. The apparatus of claim 52 and wherein:

said lower ends of said flights have an internal part-cylindrical surface at a radius from said axis substantially equal to the radius of the inner cylindrical surface of said auger core above said cut-outs.

55. A method for blending dry edible solid ingredients with a frozen base product comprising:

starting a flow of the frozen base product from a freezer outlet to a blending chamber to flow through the chamber to a blended product outlet;

selecting a plurality of types of edible ingredient solids and entering solids of the selected types into said blending chamber;

augering said selected types solids into flow of said base product when flowing through said chamber and thereby producing a blend of said solids in said frozen base product; and

delivering said blend out of said blending chamber through said blended product outlet..

56. The method of claim 55 and further comprising:

storing in containers, a plurality of solids of different types of edible ingredients, each different type in a different container;

selecting certain ones of said different types for blending;

releasing the solids of the selected types from those of said containers storing said selected types, into the flow of said frozen-base product; and

blending the solids of the selected types into the flow of said frozen-base product.

57. The method of claim 56 and further comprising:

rotating transfer impellers by motor drivers for releasing said solids.

58. The method of claim 56 and further comprising:

releasing said solids of said selected types in sequence of one type following another type.

59. The method of claim 58 and further comprising:

predetermining the said sequence prior to starting the flow of said frozen base product;

releasing each of said selected types for a certain period, and releasing all selected types in a release sequence cycle; and

repeating said sequence cycles while said frozen base product continues to flow to the blending chamber.

60. The method of claim 59 and further comprising:

actuating a device for starting the flow of said frozen base product from the freezer outlet; and

responding to the actuation of the device to initiate the releasing and augering of said solids into said blending chamber.

61. The method of claim 60 and further comprising:

using actuation of said device to initiate operation of both a blender motor and the said sequence cycle.

62. The method of claim 55 and further comprising:

using a rotary auger with spiral flights formed around a hollow core with a longitudinal axis; and

flowing said frozen base product from said freezer outlet downward through said core toward said blended product outlet.

63. The method of claim 62 and further comprising:

providing a wall having an inside surface circular around said axis and surrounding said auger;

providing matching profiles of said auger and said inside surface thereby fitting said auger to said inside surface;

sweeping downward on said surface with said auger flights while rotating said auger relative to said wall, on said axis;

using a conical portion of said interior surface to guide said solids inward as they are swept downward by said rotating auger, into said frozen base product flowing downward from said core through said chamber to said blended product outlet.

64. The method of claim 63 and further comprising:

admitting solids swept downward, into said flowing frozen base product, through cutouts between flights in said core.

65. The method of claim 64 and further comprising:

enabling solids guided inward into said cutouts as said auger is rotated, to move upward relative to the bottom of the flight above the cutout at the location of entry of the solid into the cutout, and move inwardly along a curved surface of said auger toward said axis and into said flowing frozen base product.